

**REMARKS**

Claims 1-11, 13-24 and 26-31 are pending in this application. Claims 24, 26 and 28-31 are currently withdrawn. Applicants respectfully request reconsideration of the pending claims.

**I. Rejections Under 35 U.S.C. §103(a)**

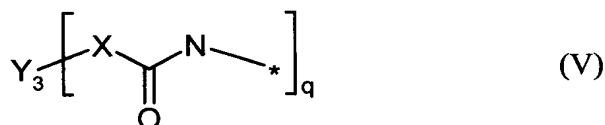
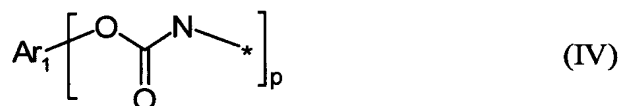
**A. Claims 1-17, 19-23 And 27**

Claims 1-17, 19-23 and 27 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over U.S. Patent No. 6,740,192 ("Lu") in view of U.S. Patent No. 4,486,556 ("Kordomenos") and U.S. Patent Application Pub. No. 2002/0007003 ("Merz"). Applicants respectfully traverse this rejection.

The Patent Office alleges that the polyurethane composition described in Lu is prepared by reacting a polyisocyanate with a compound containing at least two active hydrogen groups followed by the addition of a compound having one or more epoxide groups and an active hydrogen. See Final Rejection, page 3 (citing Lu, col. 7, lines 1-10). The Patent Office further alleges that the compound containing at least two active hydrogen groups may be (1) a polyhydroxyl compound prepared by the addition of products of alkylene oxides with phenol-formaldehyde resins ("Reaction 1") or (2) polyether polyol obtained by the polymerization of epoxides with hydrogen containing starter compounds such as 4,4'-dihydroxydiphenylpropane ("Reaction 2"). See Final Rejection, page 3 (citing Lu, col. 8, line 61 to col. 9, line 4 and col. 9, lines 34-38).

**1. Claim 1**

Lu does not describe that the polyurethane prepolymer of the polymer **B** simultaneously has the structural elements of the formulae (IV) and (V)

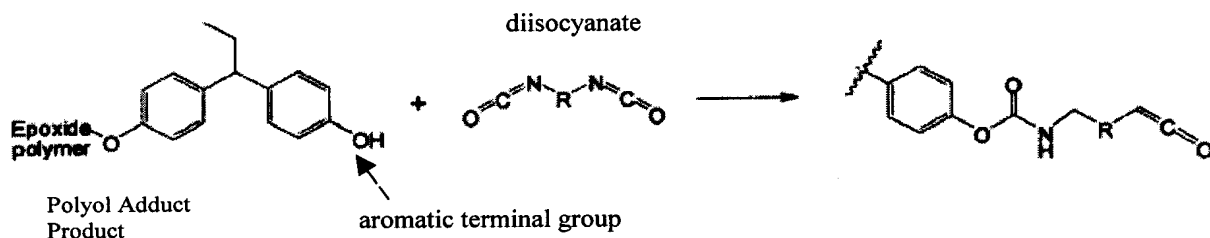


in which p is 2, 3 or 4; q is 2, 3 or 4; X is S, O or NH; Ar<sub>1</sub> is a p-valent, optionally substituted, aryl radical; Y<sub>3</sub> is a q-valent radical of an isocyanate-reactive polymer after removal of the terminal amino, thiol or hydroxyl groups; and \* is the linkage point to the remainder of the polyurethane prepolymer, as recited in claim 1.

In other words, claim 1 recites that the Y<sub>1</sub> n-valent radical of the polyurethane prepolymer B has a structural unit defined as a "p-valent aryl radical" (Ar<sub>1</sub> of Formula (IV)) bound via urethane groups. However, the chemical formulas described in Lu do not describe a polyurethane prepolymer having this feature.

## 2. **Final Rejection**

In the Final Rejection, the Patent Office alleges that (1) the polyol adduct product used in Reaction 2 of Lu would have an aromatic terminal group due to the presence of the aromatic starter compound 4,4'-dihydroxydiphenylpropane and (2) upon reaction (illustrated below) of the polyol adduct product with a diisocyanate, this aromatic terminal group would form the aromatic urethane moiety recited in the present claims. See Final Rejection, page 8. In other words, the Patent Office's position rests on the premise that the polyol adduct product has an aromatic terminal group.

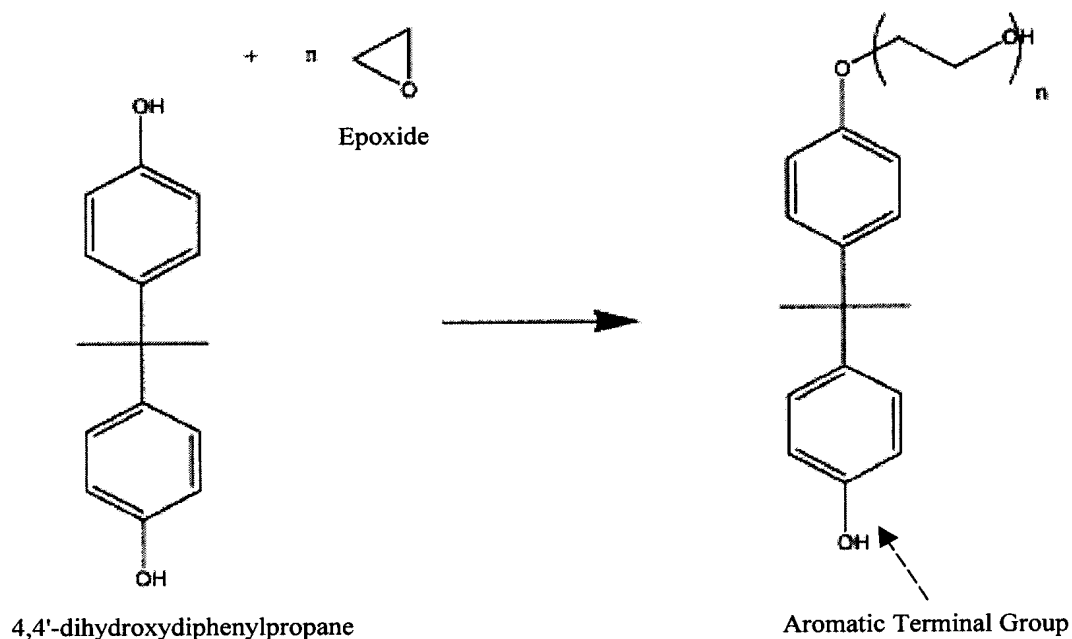


### **Patent Office's Position Regarding Reaction 2 Of Lu**

#### **3. Reaction 2**

Applicants respectfully submit that Reaction 2 of Lu does not form the structural element of Formula IV in claim 1 because the polyol product of Reaction 2 does not form an aromatic terminal group.

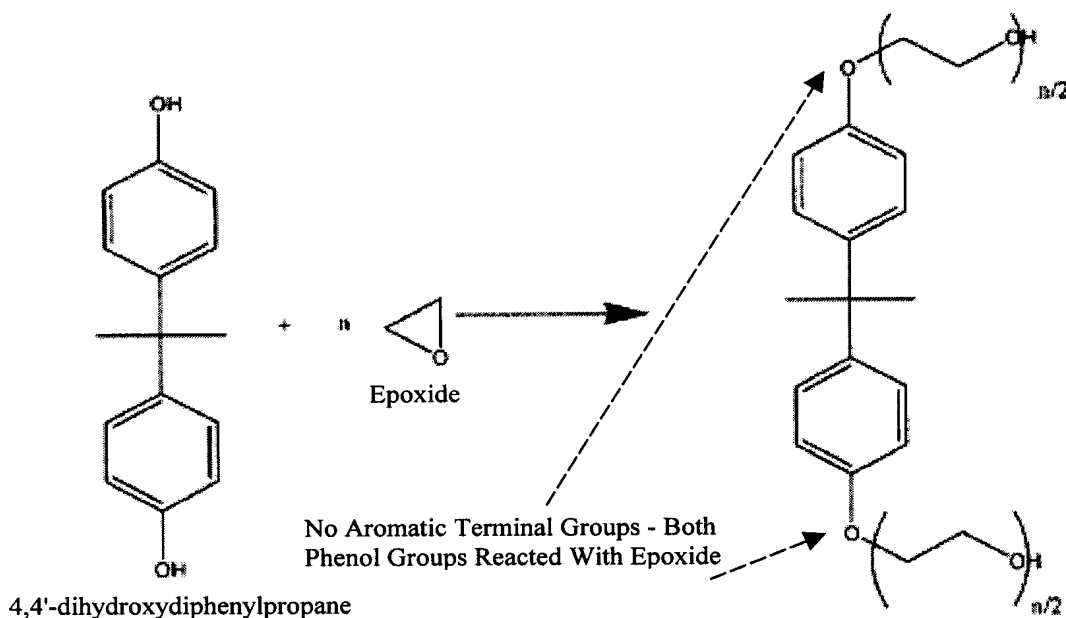
Although not specifically illustrated in the Final Rejection, the Patent Office's position regarding Reaction can be illustrated by below Reaction Diagram 2A.



**Reaction Diagram 2A**

As illustrated above, the Patent Office's position is premised on the epoxide reacting with only one of the two phenol groups on 4,4'-dihydroxydiphenylpropane and thus forming an aromatically terminated polyether.

However, such reasoning is fundamentally incorrect, because polymerization reactions, such as those described in Lu, contain a large excess of epoxide compounds so that the polymerization reaction goes to completion. For the convenience of the Patent Office, the correct reaction diagram is illustrated below as Reaction Diagram 2B.

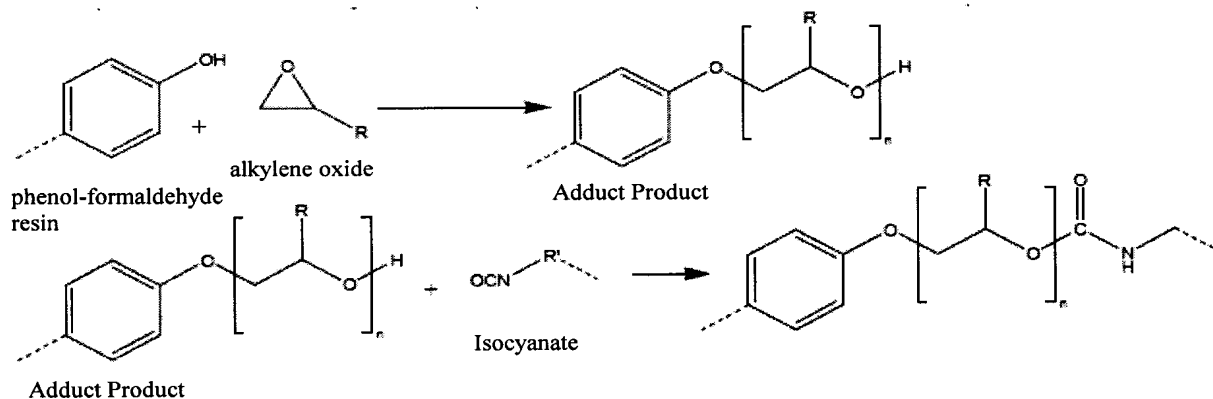


### **Reaction Diagram 2B**

As such, the large excess of epoxides (illustrated above in Reaction Diagram 2B as "n") will inevitably cause the polymerization reaction described in Reaction 2 of Lu to occur at two phenol groups and not at a single phenol group as alleged by the Patent Office.

#### 4. Reaction 1

Furthermore, Reaction 1 described in Lu also does not form the structural element of Formula IV in claim 1 because reaction of a phenol-formaldehyde resin and the alkylene oxide also does not form an aromatic terminal group. For the convenience of the Patent Office, Reaction 1 may be illustrated in the following manner:



As illustrated above, the phenol-formaldehyde resin has only a single hydroxyl group, which is subsequently removed when the resin reacts with the alkylene oxide.

For the above reasons, because the adduct products of Reaction 1 and Reaction 2 Lu do not form an aromatic terminal group, neither of these reactions form the structural element of Formula IV in claim 1.

#### 5. Kordomenos And Merz

Kordomenos and Merz do not remedy the deficiencies of Lu. Kordomenos was introduced as allegedly describing the reaction of product of the epoxide adduct (A) and Merz was introduced as allegedly describing a thixotropic agent. However, neither Kordomenos nor Merz describe the structural element of Formula IV in claim 1.

**6. Conclusion**

As such, Kordomenos and Merz alone or in combination with Lu would not have provided one of ordinary skill in the art with any reason or rationale to have produced polymer B of claim 1.

**B. Claim 18**

Claim 18 was rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Lu in view of Kordomenos and Merz, and in further view of WO 02/48235 ("Kaji"). The Patent Office used U.S. Patent No. 6,903,180 as an English-language equivalent of Kaji. Applicants respectfully traverse this rejection.

For the above reasons, Lu, Kordomenos and Merz would not have rendered the present claims obvious. Kaji also does not remedy the deficiencies of these references. Kaji was merely introduced to describe dicyandiamide as a curing agent. However, Kaji does not describe a polymer with an aromatic structural unit bound to a polymer chain via urethane groups. As such, Lu, Kordomenos, Merz and Kaji alone or in combination, would not have provided one of ordinary skill in the art with any reason or rationale to have produced polymer B in claim 1.

Withdrawal of this rejection is respectfully requested.

**II. Rejoinder**

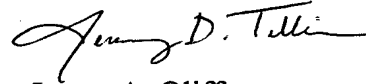
In view of the foregoing amendments and arguments, Applicants respectfully request that upon allowance of claims 1-11, 13-23, 27 and 32, claims 24-26 and 28-31 be rejoined with the present application and similarly allowed.

**III. Conclusion**

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-11, 13-24 and 26-31 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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